1: Spier E-5 (1918) 1928
NT14 Plateau Yumans NT14
Havasupai

ECONOMIC LIFE

Agriculture

The Havasupai are largely agriculturalists. Their interest centers so 241
firmly in their fields, and comparatively so little attention is given to wild products, that the loss of a crop may mean a famine year. In fact, although the quantity of wild seeds and plants that is gathered is considerable, it is used chiefly during the winter to eke out the field products. The Havasupai are inordinately proud of their abundant harvests and their superiority in this regard to the Walapai, Navaho, and Paiute. Harvest is a time for jollification, when their neighbors come to share their bounty. So great is their interest in their fields that even today, when remunerative employment is to be had on the plateau, so Mr. C. H. Gensler, the former agent, informs me, men will leave their work, with its ready money, to tend their crops.

The fields[1] about the village are as extensive as irrigation will permit, [311]
so that, depending on the location of the erratic creek, all of the one hundred tillable acres are farmed. A new field is cleared of brush by grubbing and burning it. Trees are felled by burning their bases; the charcoal is not chopped away, nor are trees ever girdled. The fields are fenced.

At present there are two dams supplying water to the irrigating 312
ditches; the first is located well above the village, whence the main ditch follows the east canyon wall as far as Camp 29 (see map, Fig. 50); The second is at the bend below Camp 26 whence its main ditch parallels the creek in the direction of Camp 51. The dam, which extends halfway across the shallow stream is built about a heavy log set well into the bank, where it is held in place by stakes driven on the down-stream side. The bank is roughly faced with stones to prevent the log washing out. A series of poles are driven obliquely along the upstream side, their upper ends resting on the log. Fascines of willows, about 1.5 m. long and containing stones, are laid end to end along the base of this slanting face, with a second set laid in front on the bed of the creek breaking joints with these. A second tier of fascines might be built above these. Willow brush, placed transverse to the stream, is then piled thickly on the face of the dam to the top. The rapidity of the stream is such as to drive considerable water behind this scoop into the main ditch. Changes of water level produced by every little storm necessitate frequent renewals of the dam. Constant attention is also necessary for the irriga-

[1] There seems to be no word for cornfield; one speaks of going to his corn, even if the field contains a mixed crop.

1:Spier E-5 (1918) 1928
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312 tion ditches because the sand in which they are built is so light that they easily break.

The main ditches are perhaps two to three feet deep; the others are quite shallow. The ditch system is not complex because most fields that are irrigated lie directly under the main ditches; others are fed by a few laterals. Maintenance of the dams and ditches is not a community affair, but devolves on those whose fields are supplied by the particular dam or ditch. They are dilapidated most of the time, being repaired only as needed. This is to be expected because the material is so light as to wash out easily and it would be futile to keep them up when not in use. There is no set regulation for the use of the water. The supply is large, the need is small, and apparently there is little friction over [578] rights to its use. Yet quarrels have arisen from this source.

241/592 Planting is a family occupation, even the children helping to dig holes. Garcés says:—

> I had much complacency to see that as soon it was dawn each married man with his wife and grown sons went forth to till his milpas, taking the necessary implements, as hatchets, dibbles (coas), and hoes, all of which they procure from Moqui.[1]

As a rule each family plants as much corn as possible. Corn, beans, and squash are the staples, the year-round food. Corn (*teyă'dj*) is not planted 243 deep; 5 to 7.5 cm. being usual. Straight lines for the rows of hills may be drawn with the foot; their orientation is immaterial. Kneeling, the [412] first hole is scratched with the planting stick (*hwdlia*) in the manner of a canoe man wielding his paddle. This is a buckthorn branch (*Condalia lycioides* var. *Canescens* (Gray) Trel.), 2 cm. in diameter, 65 cm. long, with one end cut wedge-shaped.[2] The soil is loosened to a depth of 20 cm. and eight or ten kernels dropped in. Before putting the corn in the first hole, the planter prays:—

[539]	mĕdjpăk	teyădjmehăna	owi
	growing	corn good	I do it.

"Grow good: when your stalk grows, grow tall: grow like the mythic corn." Then he drops the kernels into the hole and chewing another, blows t toward the mythic corn, two white marks high on the canyon wall. These represent the two original ears given by the twin culture heroes.[3] Filling the first hole, he takes two short steps forward, kneels, and digs a second, and so on. The second row parallels this

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[114] [1]Coues, 345. A later statement (435), that tribes upstream from the Mohave lack crops, must be taken to mean that the Walapai and Havasupai had less than the Mohave.

[2]Cushing, (a), 550, notes the use of a planting stick provided with a footrest, but my informants denied this.

[171] [3]The Zuñi also pray at the first planting [Cushing, (d), 178–179].

2:1liff Y-5 (ca.1901) 1964 NT14 Plateau Yumans NT14
Havasupai

774 camera they feared, so leaving it in a shady spot, I went over to where they crouched behind a boulder and asked them why they ran. With much excited sputtering they made me understand that if I took a picture of them, their souls would go into the picture. One could not live without a soul. They illustrated with exaggerated gestures how dead they would be when their souls left their bodies.

I retrieved my camera and opening and focusing it, tucked it out of sight under my arm. When they returned, talking and laughing, I snapped the picture without their knowledge.

343 Families who owned large plots of ground had several store-
423 houses, some as many as five. Regardless of how the land had
427 been distributed when the People of the Blue Water settled in the canyon, through inheritance some individuals had acquired more land than they could till, and it was loaned or rented to friends or relatives. There were a few whose plots were no larger than the floor of a room, but every family had at least one storehouse tucked away in a crevice in the wall.

000 It was late afternoon when I returned to the school and wrote my report. I had been so intent on learning how the people raised their food and preserved it that I had not measured a foot of ground, nor counted the members of the tribe. Besides, what the Commissioner must know, I finally decided, was that the Havasupai needed garden tools; that the school children ate out of doors in all kinds of weather, and that their food was cooked on a range protected only by a bush. These things he could do something about. Here is my report, as it appeared in the *Annual Report* of the Department of the Interior for the year 1901:

SIR: I have the honor to submit the annual report of the Havasupai tribe and school for the fiscal year ending June 30, 1901.

241 Havasupai Tribe—The Havasupai is entirely self-supporting. He depends on the products of his farm for his livelihood. He is proud of his gardens and his orchards, but prouder still of the fact that he labors. Living on the banks of a clear, sparkling stream, he is never ● [312] troubled by crop failure. He utilizes the water of the stream for irrigating purposes and an abundant crop is assured him;

2:11iff Y-5 (ca.1901) 1954 NT14 Plateau Yumans NT14
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it useless. The rocks were scorching hot, the canyon terrifyingly deep; I became so dizzy that I crawled back to the rim with great difficulty.

After lunch we started home. The heat increased; we suffered with thirst, for both canteens were empty. After several miles, Ute led us to a "rain tank" in a side gulch, to which we could not take the horses. We lay flat on the ground and drank our fill of the stagnant rain water that had collected in the concave surface of a layer of stone. Then we noticed a half-dozen lizards, white stomachs turned to the sky, floating on its surface. Within a few minutes I developed a blinding headache and could not sit in the saddle. I lay in the shade of a mesquite while Frances bathed my face with some of the water which we had reluctantly poured into the canteens, and massaged the tight cords in the back of my neck until I was able to ride again. This was as near sunstroke as I ever wish to be.

Late that afternoon we returned to the pool where we had watered the horses the previous day. They were wild for water. Ute's horse reached it first, and drank until he began to bloat and groan in agony; so Frances and I took ours away before they could satisfy their thirst. We urged the horses on, conscious of that long detour around Beaver Canyon. Finally we arrived at our quarters, tired, hungry and dirty, but filled with a vision that time cannot erase of angry waters fighting their way through stone walls.

we were riding up or down literal stairways cut in the rock, or rounding "Cape Horns," where we held our breath at the dreadful consequences that would ensue were horse or man to slip. Entering Rattlesnake Canyon our whole course was on a shelving slope of rock, over which even experienced horses tread gingerly. At last we came to the bed of the main canyon, and then for five or six miles we journeyed on, in the sand or the gravelly wash, for the stream that flows through this narrow canyon in storm times has no other law than its own wilful force. To-day we ride in one place, to-morrow's storm changes everything. After numberless twinings and twistings, all of which, however, gave a persistent northwesterly direction to our travelling, we came in sight of a score or so of large and fine cotton-wood trees, whose height far surpassed the smaller mes-quite, cottonwood, and other trees that line much of the canyon's bed. These large trees told us our journey was practically at an end, for here begins the outpour-ing of the numberless springs that make the stream we can already hear rushing in its pebbly bed lower down. Without any premonition they spring out in large and small volume at the foot of some of these trees, and the Havasu — the Blue Water — is made. Every few yards adds to the water's volume, for more springs empty their flow into it. The first and only real buildings are the schoolhouse and the homes of the farmer and teachers, and then, at once, begin the small farms of the Havasupais.

Stand on the slope here, where a mass of talus rises from the trail side, so that we can survey the whole of the picturesque scene. Note its setting! Towering walls of regularly laminated red sandstone, though the

3:James T-5 (ca.1900) 1903
NT14 Plateau Yumans NT14
Havasupai

133 361 layers are of differing thicknesses, wind in and out, as if following the meandering course of the stream, and over this the perfect blue of the Arizona sky. These make the most marvellously picturesque dwelling-place of America. Even Acoma's mesa heights and Walpi's precipice-surrounded walls are not more picturesque, and when you add the charm of the verdure nourished by the sweet waters of the Havasu, the picture is complete in its unique attractiveness.

Not even in the Green Emerald Isle, or the county of Devonshire, or the vineyards of France, is richer verdure to be found than fills up the open space between these great walls. Willows reveal the winding path of the Havasu, and everywhere else are the fields of the Indians. Patches of corn, watermelons, squash, canteloupes, beans, sunflowers, chili, onions, and alfalfa, with here and there peach, mesquite, and cottonwood trees, abound. As a rule these patches are protected and set off one from another by hedges of wattled willows or fences of rudely placed cottonwood poles. Through the fields trails meander in every direction, and they are also "cut up" by irrigating ditches. Some of the better irrigated fields are divided into small sections — like the squares of a checker-board — in order that the water may be more systematically distributed.

133 241 311 [487] [312]

342 The peaceful *kawas* of the Havasupais nestle here and there among these verdant growths. Themselves covered with willows, it is often hard to distinguish them from the trees, were it not that at our approach small groups of men, women, and children, some clad in flaming red, others in all the colors of the rainbow, and some in even less than Mark Twain's descriptive smile, stand forth and reveal the dwelling-places. Now and again [291]

3:James T-5 (ca.1900) 1903
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should the man born with a mental advantage over his fellows exercise that advantage any more than the man born with a physical advantage? We have not quite ceased to worship the Sullivans, the Corbetts, and the Fitzsimmonses, and, where we have, we have transferred our worship to the intellectually strong, many of whom are no more worthy our homage than the prize fighters. So now it is the intellectually strong who prey upon the intellectually weak, and, as in the physical conflict, it is inevitable that the weak "go to the wall." In simple cunning the Havasupai Indian may be our superior, but in deep craft he is "out of the field." His bow and arrow tipped with obsidian or flint pitted against our repeating rifle; his rolling of heavy rocks opposed to our Gatling guns; his mule and burro against our iron horse; and his pine torch against our electric light, — all demonstrate him to be in his intellectual minority, or at an intellectual disadvantage. He makes a fine figure in our romances, but I sadly fear that the knell of his doom has sounded, and that a few generations hence he will be no more.

Wallapai and Havasu Canyons, far more than the Grand Canyon, meet the popular idea as to what a canyon is. Their walls are narrow and precipitous, and one staying in their depths must be content with a late sunrise and an early sunset. Just above the rude bridge before described are several natural reservoirs of water. Here the canyon is not more than from one hundred and fifty to two hundred and fifty feet wide. This close proximity of the walls, which fairly overshadow one, compels one to feel his insignificance far more than when he stands in the wider and more comprehensive vastness of the Grand Canyon.

At an elevation of 4000 ft., the Esplanade, 1 mi. wide in places, crumbles away in ragged steps through the upper strata of the Supai formation. Abruptly, vertical walls break away, dropping 500 to 800 ft. and forming the narrow inner gorge of Cataract Canyon. The Supai formation, composed of sandstone and shale, locally is called the Redwall in reference to its color, which contrasts with the Whitewall above. This is not to be confused with the geologic designation of the Redwall limestone, an underlying formation exposed downstream from Supai village in the area of the waterfalls. It is from the crumbling top of the Supai formation that storms wash huge boulders which tumble and crash to the canyon below.

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The Factor of Water Supply

The existence of permanent water sources determined the residence pattern. The Havasupai have been described as seminomadic, but a more accurate term might be seasonally migratory. On the plateau, families sometimes built temporary brush shelters when they were harvesting pinyon nuts or other occasional crops, or when the tribe assembled for ceremonial or other purposes, but for the most part, families erected permanent structures to which they returned year after year as long as the house was deemed suitable. The presence of water within a reasonable distance was the determining factor in the location of both permanent and temporary camp sites, excepting those of the most transient nature. There were a number of permanent springs known on the plateau, and the karst topography provided natural reservoirs for retaining precipitation. It is speculated that the prehistoric Havasupai, with the karst examples before them and having the engineering skill and industry to build and keep in constant repair the canyon irrigation system, probably built dams on the plateau to impound water at some of the sites now similarly used by them or neighboring ranchers.

221 312 [342] [361] [241]

Water sufficient for irrigation was present at a site called Indian Gardens, which was located a short distance below the canyon rim on Bright Angel trail and which was farmed by the Havasuapi in early historic times. Prospect Valley, west of Cataract Canyon, also was farmed (Spier, personal communication, 1957). In addition, several other areas, including one on the floor of Grand Canyon proper, were farmed by means of irrigation.

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In Cataract Canyon,* a short distance above the village area, numerous springs emerge on the canyon floor, flowing over impervious shales in the Supai formation. The water is highly charged with minerals, travertine being deposited along the stream's course. This deposition accounts for some of the erratic behavior of the creek. Masses of crumbling travertine jut from the ground here and there, evidence of past shifting of the creek channel. Havasu Creek,* swollen by melting snow or desert cloudbursts, churns its banks into mud, sometimes sweeping away a man's field and the ground beneath his house.

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*The names, Cataract and Havasu Canyon and Cataract and Havasu Creek, appear interchangeably in the literature and all four terms are in common usuage among residents of the area. [103]

[Text continues on page 10]

4: Smithson E-5 (1951-1958) 1959 NT14 Plateau Yumans NT14
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Fig. 4. Havasupai Indian Reservation in relation to topography of Cataract (Havasu) Canyon, showing elevations from the Coconino Plateau to the Colorado River.

4: Smithson E-5 (1951-1958) 1959 NT14 Plateau Yumans NT14
Havasupai

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Fig. 5. Sketch showing Havasupai Indian Reservation in relation to topography.

4: Smithson E-5 (1951-1958) 1959 NT14 Plateau Yumans NT14
Havasupai

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Fig. 6. Fields in Cataract Canyon. Irrigation water is diverted from Havasu Creek onto fields by means of a system of laterals and smaller ditches. Individual plots are dyked for flood irrigation.

133 731 In January, 1911, the most disastrous flood of historic times funneled melted snow resulting from a sudden thaw on the plateau and higher canyons into the confines of Cataract Canyon. A churning roar from the advancing waters signaled reservation residents, who made a predawn flight to the talus slopes. A wall of water smashed through the village, leveling primitive hogans and stone government buildings alike and sweeping away crops, food [657] stores, and personal possessions. Since that time some measures have been employed by the Office of Indian Affairs, without complete success, to contain the creek in a permanent channel as it flows through the village area.

[312] An irrigation system, installed about 30 years ago, repeatedly has suffered major damage from floods. The Indian Service plans to install new diversion headings and to build three large aqueducts with permanent footings. This is expected to stabilize the present irrigation system and to add a few more acres to land now being farmed (Kelly 1953, 56).

133 [648] About a mile downstream from the village, Havasu Creek tumbles in a series of waterfalls which attract tourists. The scenic aspect of Cataract Canyon in recent years has become an economic asset and a precipitator of increasing Havasupai-white contacts.

133 311 731 Travertine terraces deposited at the crest of a waterfall eventually divert the falls to another location. A severe flood in 1952 destroyed a 50 ft. fall, lowered the creek channel for some distance upstream and rendered useless the irrigation system servicing fields in the vicinity. Additional floods over the next few years further deepened the river channel, washing out adjacent fields and leaving others without water. However, some new gardens are now being planted at lower levels along the stream where land can be reclaimed.

439 648 Since the two most spectacular waterfalls are beyond the reservation boundary, concern is felt by the Havasupai that their budding tribal cooperative tourist enterprise may be doomed. Private business interests may be able to bypass the reservation area by providing transportation into the canyon at the falls and establishing tourist accommodations there.

Climate, Plants and Animals

132 Records of a climatological substation operated at Supai for 14 years between 1899 and 1930 reveal a maximum annual precipitation of 13.87 inches and minimum of 4.50 inches, averaging 8.89. Precipitation was highest in February, July and August (Martin and Kincer 1933, Section 25, p. 14).

Temperatures in Cataract Canyon are consistently higher throughout the year than on the plateau. Snow seldom reaches the canyon floor, but freezing occurs in the coldest months. On sunny winter days when canyon air is cool, the warmest areas are southern exposures along the top of the talus

132 slopes where storage granaries were located and where some families occupied caves and rock overhangs until 30 or 40 years ago. The humidity of the canyon makes the comparatively warmer temperatures there less bearable than those on the plateau. This, along with the scarcity of fuel, combined to make the plateau the favored winter abode.

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137 Botanically, the plateau and the canyon floor represent the extremes within the Sonoran Life Zone. On the plateau, clumps of juniper predominate along with stands of western yellow or ponderosa pine and pinyon pine. Nearer the canyons, trees give way to sagebrush, grasses, yucca, and a variety of wild food plants including mescal. Prickly pear, yucca, mescal, and some of the other food plants of the plateau, are also found on the Esplanade and at lower elevations. The change in vegetation is a gradual one from canyon rim to floor, with desert plants predominating at the lower elevations. Acacia and mesquite, Mormon tea, agave, prickly pear and other varieties of cacti, yucca, salt brush, and numerous grasses from which seeds were harvested, are found at elevations a few hundred feet above and below the canyon floor. Dense willow thickets border Havasu Creek, and this was the predominant fuel plant in the canyon until introduction of the cottonwood as a winter fuel source in early reservation days. Watercress in abundance and many flowering plants grow along the creek bottom and the irrigation ditches. Below the farm area, in places where the stream is impounded behind travertine terraces, cattail and other marsh plants abound, while only a few feet away the usual desert plants make a sharp contrast. Datura (jimson weed) is scattered everywhere in the canyon's sandy soil; the Havasupai have experimented with it as a narcotic but have rejected it.

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133 Reservation farms occupy the canyon floor, which is 1/4 to 1/2 mi. in width. Houses are located on individual farms throughout the area. Fields
361 lie on both sides of the creek, occupying about 140 acres of arable land.
●312 Fruit trees, still productive, and scars of abandoned fields mark an area below the village which, until about 20 years ago, was well populated. The canyon floor drops in elevation about 150 ft. from south to north in a distance of approximately 2 mi. in the cultivated area.

487 Cataract Canyon formerly was accessible from three directions by means of a half dozen horse trails and several foot trails which entered the canyon close to the village area. Although these old trails are sometimes used at present, the Havasupai more frequently travel the improved Topocoba and Walapai trails, which are used also for packing tourists and supplies into Supai.

245 Peach trees were introduced prior to 1876 (Whiting n. d., 59), and
177 the similarity of the Havasupai term for them to that of the Hopi demonstrates their Hopi origin (Spier 1946, 124). This refutes a popular notion that John D. Lee, a refugee Mormon, introduced peaches in comparatively recent times. Other orchard crops are pears, apricots, apples, both black and white figs.

THE HAVASUPAI

sils, and blankets is owned individually. Each one can dispose of his 422
possessions independently.

The Havasupai is an excellent horseman and packer. He usually 492
has quite a number of horses and does considerable packing on the trail with them. Traveling up and down the steep winding trail to the top of the canyon is very strenous work for the horses and the Indian must have a sufficient number of them so as to rest each horse for a few days after one of the trips.

When first visited by the white man these people dug holes with 241
stone hoes, planted their seeds, but did little cultivating. Only a small acreage was planted, this being irrigated from small ditches running [213]
from dams of rock, logs, and willows piled in the river. Methods of farming are still simple. The ground is first plowed and then cultivation is done with a hoe; some rotation of crops is practiced from year to year. Irrigation ditches now serve over a hundred acres of land.

The Havasupai are among the most conscientious farmers in the [140]
Southwest. Their interest centers so firmly in their fields that when remunerative employment is to be had at Grand Canyon the men will leave the work with semi-monthly pay to plant and tend their crops. Planting begins in the middle of April, but previously the fields are cleared of weeds and brush, plowed with a one horse walking plow, and irrigated two or three days before planting.

The tools used are a planting stick about an inch wide and a foot 241
and a half long with one end cut wedge-shaped, and a modern hoe with 412
a blade at an angle to the handle. Formerly a wooden spade-shaped hoe with an extra long handle was used; also, the shoulder blade of a [237]
horse was held in the hands and used to scrape the sand out of irrigating ditches and for scraping out weeds.

Planting is an occupation that most of the family takes part in; 241
even the small children help dig holes. The corn is not planted deep, about three and one-half inches is the usual depth. The lines for the rows of hills are generally drawn with the foot. Kneeling, the first hole is dug with the planting stick; the soil is loosened, and eight or ten seeds dropped in. However, before putting the kernels in the first hole the planter says a prayer. Filling the hole, he takes two or three short steps forward, kneels, digs a second hole, and plants. This he continues until the field is planted.

The planting is not all done at one time but extends over a period of two months. Beans are planted on the same day as corn and placed half way between the corn hills. Both crops ripen about the same time.

When the young corn shoots are about two inches above the ground, they are given a second watering. When the tassels appear, about two and a half months after planting, the corn receives a third and last watering. The fields are weeded at regular intervals and traps are placed for rodents which would otherwise destroy a portion of the crops.

The Havasupai plant a small variety of corn, with ears about six [137]
inches long, known as Mohave corn, which will yield ears in about two months. Other varieties ripen at intervals from mid-August until the last of September. When the ears are ripe, they are gathered in burden baskets. The gatherer breaks off the ears and throws them in the basket on his back while he walks along. The corn is dried on the 251
roofs or on brush heaps. It may be placed in the storage chambers either in the form of husked ears or shelled and piled in a corner. Seed corn is always husked and heaped in a separate pile in a corner. Watermelon, pumpkin, sunflower, and squash seeds are dried, put in cloth sacks and stored in the storage chambers. Beans and corn ripen at the same time and those beans not eaten green are dried and stored in stone chambers for winter use.

The Havasupai have innumerable ways of preparing corn. Only 252

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Mamie Chickapaniga has a right to be proud of her corn field for it is the lush reward for much tender care.

133 Perhaps a mile downstream from the point at which the canyon spreads out to make room for the village, it quickly narrows once more. It is here that the first of three magnificent waterfalls may be seen. By this time Cataract Creek is the size of a small river and has become brilliantly blue. Carbonates of lime, which become more concentrated as the stream flows along, give it this color. The breath-taking, snowy-white falls plunging as far as 220 feet over vermilion cliffs into turquoise pools is a sight which no one who has seen it will ever forget. Though these falls are only a mile or so below the village, it is strange but true that several of the women who are middle-aged or older and have lived here all their lives, have never taken the trouble to see them.

● 312 Cataract Creek beautifies this canyon to be sure, but probably the most vital use to which the water is put is that of irrigation. Above the village two log and brush diversion dams scoop water from both sides of the

stream into ditches with a speed of flow sufficient to divert a considerable amount of water. It is then carried through the village and into the fields. Most of the irrigation canals are simply small ditches dug in the sand, banked slightly on the sides. The main ditches are as much as two feet deep and three feet wide, but the laterals are much smaller. These are dug from the main ditches to the individual garden plots which may then be watered as necessary. Each field is divided by long mounds of earth into sections which are watered one at a time by letting the excess from one into the next until the entire field is well soaked. Whenever the water must be carried across the mouths of side canyons where ditches would be frequently washed out in storms, small aqueducts have been constructed with piping and cement. The Indian Service has made plans to install new diversion dams and three new aqueducts with permanent footings at a cost of many thousands of dollars. The old system is a primitive one, but it has stood the test of time, for the Havasupais have been irrigating for centuries. 312 241 312

In preparing the fields for the first planting in April, the old buckthorn planting stick as an agricultural tool has given way to the plow, scraper, harrow and disc as well as shovels and hoes. Most of this equipment, along with several cultivators, mowers and one tractor, belongs to the Tribal Council which rents it out for services or money. Unfortunately, most of these tools are badly cared for since the Havasupais seem to have little mechanical ability. Men, women and children plant, but the men do most of the field preparation, irrigation and fence building and repair. The age old prayer at the first planting is still a very important part of this spring activity. 241 [413] [177] [655] [463] [782]

The more than 280 Havasupais speak a dialect which, along with that spoken by the Walapais, the Yavapais and the Tonto, has been classified as the eastern division of the Yuman stock. Havasupai and Walapai are particularly close, the dialects being no more different from each other than are "Bostonian" and "Brooklynese." The cultural affinities of these two groups are equally close and their members live comfortably in each other's midst and frequently intermarry. 197 [101]

Physically the Havasupais bear a close resemblance to the Indians of the Lower Colorado. They are of medium to short stature and inclined to fatness. Their complexions are relatively light and they smile easily and winningly. 142

11: Shufeldt D-4 (no date) 1892
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175 Mr. Cushing's best account of these people, however, is published in another connection, wherein he relates how he made a long and dangerous journey from Moqui to the Supai Cañon.*

Following his description of hazardous descent into that fearful gorge, Cushing goes on to say in his article, that "the first Ha-va-su-pai I saw
[291] may be taken as a type of his race. But lightly clothed, a strange close head-band around his temples, he swiftly passed from one bush to another as we we emerged from the little grove. Below us stretched a
[133] green, moist plain of sandy soil, nearly two miles long by half a mile at its greatest width. We could catch only occasional glimpses of it through the rank growth of willows, the leaves of which everywhere brushed our heads as we rode along the river trail; these glimpses,
[24] however, revealed numerous cultivated fields of corn, beans, sunflowers, melons, peaches, apricots, and certain plants used in dyeing and basket making, and usually carefully protected by hedges of wattled willows or fences of cottonwood poles. Everywhere these fields were crossed
[312] and recrossed by a net work of irrigating canals and trails. Here and
[342] there were little cabins, or shelters, flat-roofed, dirt-covered, and closed in on three sides by wattled flags, canes, and slender branches, while the front was protected by a hedge like those of the fields, only taller, placed a few feet before the house, and between which and the house burned smoky fires."

"The houses were always nestled down among the thick willows
[361] bordering the river, or perched on some convenient shelf, under the shadows of the western precipice. In several places, within some of the great horizontal cracks of these western cliffs, and often high up, were little buildings of stone laid in mud plaster, and not unlike the cliff dwellings we had observed on the way down, and of which ruins exist in almost every cañon throughout the great southwest."

"When we again caught sight of our Kuhni, in a little opening near the trail, he was evidently uncertain whether to run forward and warn the tribe—whose voices, mingled with the barking of dogs and the murmuring of the river, could be heard below—of our coming, or wait to greet us. Finally, he shouted in a rapid, gurgling, soft sort of language, that the villagers were coming; and then, with sort of a questioning smile, turned toward us, keeping up a ceaseless gibberish, but eyeing me closely, and evidently thinking me the most curious member of the
114 175 party."

The only other facts of importance given in this narrative are that
[752] those Indians have their medicine men and use the "sweat house," a
[515] plan of treatment seen among many other tribes. They have a great
[23] number of dogs about their village, and many of the families are blessed with from five to six children. They are, so far as the writer is aware,
[246] upon excellent terms of friendship with the whites. I am not aware

*Cushing, Frank Hamilton. "The Nation of the Willows." The Atlantic Monthly, September, 1882, pp. 362-374. The quotation I make is from page 374.

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silks of China or the shawls of Persia by ourselves. All this material is bartered with the Pueblos for blankets and various products of civilization, the former being again traded to the Hua-la-pai for red and black paints, undressed buckskins, and mountain-lion robes. Their red paint, ochre of the finest quality, has such celebrity among Indian tribes that, reaching the Utes on the north, and the Comanches in Texas, it sometimes travels, by barter from hand to hand, as far east as to the tribes of the Mississippi Valley.

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The engineering skill and enterprise of this little nation are marvelous. Although their appliances are rude, they are able to construct large dams, and dig or build deep irrigating canals, or durable aqueducts, which often pass through hills, or follow considerable heights along shelves of rock or talus, at the bases of the rugged and crooked walls of the cañon. The acequias, which have their fountain-heads in these canals and viaducts, are wonders of intricacy and regularity; yet on uneven ground are laid out in nice recognition of and conformity to unevenness and change of level in the surface they are designed to water.

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Most wonderful of all, however, are their aerial trails. Through the western branch of the cañon, down from the Hua-la-pai country, the trail for horses as well as foot-travelers is over promontories, up shelves, along giddy narrow heights, in and out of recessions, or over stone-pecked slopes, such as would dismay civilized man, with all his means of moulding the rugged face of nature. At times, so impossible does it seem for any living thing to pass further that nowhere can the trail be traced; when a turn to some crack in the rock, almost hidden by intervening bowlders, and hewn down with stone hammers to give precarious footing, shows where it goes up or descends. Great ingenuity is shown in continuing the trail along the